

## ANCESTORS OF VEGETABLE BREEDING IN ROMANIA: GLICHERIA AND EMIL TĂLPĂLARU, RESEARCHERS AT EXPERIMENTAL STATION ȘTEFĂNEȘTI- ARGES

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### Abstract

*Glicheria and Emil Talpalaru are two of the first breeders in our country, which during 1963-1984 worked at Stefanesti - Arges Experiment Station and has achieved remarkable results in improving vegetables.*

*Talpalaru Emil attended the Faculty of Agronomy in Iași, and Mrs. Glicheria Talpalaru graduated the Faculty of Agriculture in Bucharest (1952). In 1957 both became researchers at Vegetable Experiment Station Țigănești, Ilfov. From 1963 until their retirement (1984) worked at the Research Station Ștefănești and obtained the most important achievements. There are authors and co-authors of a series of books, papers or brochures on studying the phenomenon heterosis, hybrid tomato and seed production, vegetable technology and other issues. They are created the first F1 tomato varieties and hybrids that were cultivated many years in our country: Arges 1 (F1), Arges 450 (F1), Arges 400 (F1) and Arges 428 variety.*

*In the same time Mrs. Talpalaru and she is co-author of varieties and hybrids of tomatoes, but obtained, two varieties for lettuce and one for red cabbage.*

*Keywords: ancestors of research, tomatoes breeding, lettuce, seed production*

In 2017 we will celebrate 60 years since the establishment of Horti-Viticulture Research Institute of Bucharest and 50 years since the establishment of the Research Institute for Vegetable and Flower Vidra.

It is an occasion to remember some of the first major achievements of vegetable research, achievements, for the time, were paramount to support Romanian vegetable progress. Thus, through the contribution of scientific research, through organizational measures through the establishment of specialized farms and equipping them, vegetable Romanian came to meet almost all the consumption needs of the population and to obtain a quantity of vegetables for export in fresh or processed.

Among the pioneers of Romanian vegetable research at prominent place lies Glicheria and Emil Talpalaru, who conducted most of their work at Stefanesti-Arges Horticultural Experiment Station? The most significant achievements of these researchers are part of the 1960-1975 period, and should be now a stimulus for the resumption on new bases of research in the field of vegetable growing in

Arges County. We believe that there are already positive signs of revival of this activity, because at the National Conference of Horticulture in 2015, researchers Adriana Bădulescu and Ion Țița published work., New tomato varieties obtained from I.N.C.D.B.H. Stefanesti-Arges " The following are some benchmarks about the life and work of the researchers Glicheria and Emil Talpalaru.



Talpalaru Emil ( born în Dorohoi, Suceava, February 5, 1923 – died in Pitesti, Arges, August 13, 2005). Horticultural engineer, senior researcher. Settled in Pitesti in 1963. He graduated School Grigore Ghica, Dorohoi (1945) and the Agricultural Faculty Agronomic Institute of Iasi (1949). PhD in Agricultural Sciences, at University of Agriculture and Veterinary Medicine Bucharest (1973). Documentation in vegetable growing Bulgaria, Holland, Italy. He began working as a specialist in several state farms in Dorohoi and Fălticeni (Suceava County), Bucium (Iași County) between 1949 and 1957 years; In 1957 finds his true calling like researcher at

Vegetable Experiment Station Țigănești, Ilfov County (1957-1963); In 1963, he is transferred to Horticulture Experimental Station Ștefănești as head of the laboratory, where he worked until retirement (1984) and which get the most important achievements.

He is author or coauthor of several volumes: Production of hybrid tomato seeds (1961); Production scheduling of early vegetables (1964); Using economic growth rooms (1964); Selection of hybrid at tomatoes (1969); Technical rules for the production of vegetable seed (1969).

He published many studies, papers, articles and contributed to the development of programs of research, and participated at national and international scientific meetings in the field of breeding of vegetable species.

It is known as one of the top breeders in the major vegetables growing. Is the pioneer of obtaining and introduction in our country of F1 hybrids of tomatoes, and author or co-author (with his wife, Glicheria Talpalaru) of several varieties and hybrids F1 which were cultivated many years in our contry: Arges 1 (F1), Arges 450 (F1), Arges 400 (F1) and Arges 428. Emil Tălpălaru has important contributions to the study of heterosis in tomato and develop more than 60 scientific papers or layman's guide.



Talpalaru Glicheria (born in Izvoare, Orhei, Bessarabia, May 10, 1925 - died in Pitesti, Arges, November 2, 2014). Agricultural engineer, researcher, teacher. Definitively established in Pitești in 1963 with her husband. He graduated Agricultural Industrial School for Ladies from Chisinau (secondary course), then Industrial Agricultural High School from Dragasani, Valcea (1948) and the Faculty of Agriculture in Agronomic Institute, Bucharest (1952). She is started as a teacher at secondary technical agricultural schools at Sălișteța - Sibiu (1952-1953), Fălticeni Suceava (1953-1957); In 1957 he transfered as a researcher at the Experiment Station in vegetable, Țigănești,

Ilfov County (1957-1963); from 1963 until his retirement (1984) works uninterrupted as vegetable researcher at Horti-Viticultural Research Station, Stefanesti Arges (1963-1984). Work (together with his husband): Production of hybrid seeds of tomato (1961); Production scheduling of early vegetables (1964); Selection of hybrid tomato (1969); Technical rules for the production of vegetable seed (1969). Like her husband, she has written and published alone or in collaboration numerous studies and results of their own research and participating in the national thematic meetings and work-shpps. Besides varieties of tomatoes obtained, she is also known for the

creation, approval and certification of other three varieties (lettuce Arges 431 and Arges 438 and red cabbage Roşie de Argeş).

Most of the results of the two researchers were published in the volumes of scientific papers in the Annals of Horti-Viticulture Research Institute of Bucharest and in Annals of Research Institute for Vegetable and Flower Vidra. In the first volume of the scientific works of HVRI, we meet work "New valuable lines and hybrids of tomatoes" written by breeder E. Tălpălaru. In this paper it mentions that the author obtained new lines of tomato from which the lines L.402 and L.428, were found in comparative cultures through high production and high quality fruit. In this paper it presents the 408 F1 hybrid obtained by crossing from No. 10-A-23 x Fc.11. On the topic of the possibility of obtaining tomato F1 hybrids, in the same volume is writing another scientific article, signed by E. Talpalaru and Glicheria Tălpălaru capacity study entitled "Study of ability combination at tomatoes". From this article we retain the huge amount of work performed by the team that carried reports that have 321 hybrid combinations. The article proves also very large number of determinations carried out on parental forms and hybrids. We can say that Emil and Glicheria Talpalaru are the first Romanian researchers with practical positive results in getting F1 tomato hybrids.

In 1972, the two breeders published in the Annals of the Research Institute for Vegetable and Flower vol.II, the paper entitled "New Early tomato hybrids for perspective". In this paper they report on results obtained in experimental fields on behavior of tomato hybrids created in the period 1969 – 1970. From this article we learn that in order to improve early tomato assortment in Arges Experiment Station, were executed during 1969 – 1970 selection and breeding work, creating valuable genitors which were used to obtain hybrids for cultivation in greenhouses and field. Most valuable proved hybrids Arges 400 and Arges 450. The hybrid Arges 400, have determined habit growth, allowing the mechanical execution of the works. It was a hybrid extra early and with good quality of fruits valuable for requirements of domestic consumption and could be an alternative for export.

Hybrid Arges 450, though later with about 6 days than hybrid No.10 X Bizon with the comparator was, is a valuable hybrid for its production quality. This hybrid was recommended for crops in greenhouses, but also had a satisfactory behavior when it was cultivated in plastic tunnels. These hybrids had a commercially attractive appearance, hybrid Arges 450 having fruits similar to those Dutch hybrids for greenhouses. Fruit pulp was well colored, fleshy, scoreless and with relatively little seed in both hybrids. Biometric indicators on fruit were found that both hybrid fruit Arges 400 and Argeş 450 had size and shape corresponding export requirement at the time.

Also in 1972, in Volume II of the Annals of the Research Institute of Vegetable and Floriculture Vidra, Emil Talpalaru publishes „Research on some crosses between *Lycopersicum esculentum* and some wild species". In this paper it was presented systematic tomato varieties. Tomato varieties grown in all regions of the world have their origin in wild species of the genus *Lycopersicum*. The transition from wild to cultivated forms have managed over time due to human intervention, which, through selection and breeding work has managed to increase the size and quality of fruit. The author presented wild species of *Lycopersicum* genus, which have a very high dry matter content (8-13%), and vitamin C, are resistant to cold (-20 degree Celsius) and diseases, but these wild fruits are not edible. In contrast, the shapes of *Lycopersicum esculentum* cultivated forms, have low content of dry substance, are sensitive to some diseases, especially viral infections, and at low temperatures do not develop or perish.

Interbreeding between wild species and cultivated forms shows great interest because new forms can be obtained with superior qualities. Interspecific and intergeneric hybridization is a good opportunity for obtain new varieties and genitors valuable. The author, well documented, shows

that in Bulgaria, the interspecific between *L. racemigrum* and variety Zarea were obtained variety *No.10* and *Line XXIV -13*, subsequently used as genitors for the hybrids *No.10 x Bizon*, *Delicates* and *Triumph*. Going on this way, Romanian breeders have produced hybrids *Export*, *Arges 1* and *Arges 2*, which had the maternal genital selections from these lines of great value. At Research Station Ștefănești were executed hybridization between cultivated tomato varieties and *L. peruvianum* which was used as maternal and paternal genitor, but in all cases the flowers have fallen or have a small number of parthenocarpic fruits. Using like maternal genitor hybrids *Arges 1* and *No. 10 X Bizon* has achieved some fruits with a low number of seeds. Some seeds germinated and gave F1 hybrids. F1 hybrids flourished, but some flowers have fallen or self-pollinated flowers were given small fruit colored yellowish or red light. Some flowers were retrocrossed with variety *Fc 11-4*, and have obtained a high number of seeds. Using these seeds yielded normal plants with fruit of 60-70g, well colored, very early ripening. On the crosses made between tomato varieties *Lycopersicum esculentum* and *L. hirsutum* which was used as the paternal genitor, hybrids obtained were uniform and the physiological and anatomical of characters first generation physiological similar to the paternal genitor. A large percentage of these hybrids give sterile plants. These research results were later used by other researchers in our country in obtaining new cultivars of tomatoes, more valuable. Ms. Glicheria Tăpălaru, which has seconded Mr. Emil in his selection work and seed production of tomato, also had individual contributions in the work of improving the lettuce. As a result of activity in this species, he published in 1974, in the volume III of the Annals RIVFG Vidra the paper "New lines of perspective at lettuce".

The author started from the variety 'Early of May' and from a local population, and by individual selection obtained a series of lines that were tested in the selection field and comparative cultures in Spring and autumn time. After a number of years of selection, the author has managed to get seven new lines that were tested for suitability for growing in spring and autumn crop. Of these, it highlighted two lines for crops in both periods (*Arges 431* and *Arges 438*). On average in two years, both in spring crops and winter crops the line *Arges 431* achieved the highest production. At the same time, the yield of line *Arges 431* has 90% of the total in first class of quality. Tests has proved valuable *Arges* line 438 that can plant in the fall or early spring in order to obtain early production, while *Arges 431*, was more appropriate for late crops, ensuring the extension of consumption of lettuce.

Also in the III volume of the Annals of RIVFG Vidra find work "Results on seed production on tomato hybrids determined". Among the results are worth noting the growth productivity of workers who carry out harvesting pollen and pollination, castration and results regarding the number of seeds obtained and heterosis effect in F1.

Even if we have today a number of misunderstandings regarding the influence of inflorescence position on the heterosis effect, and so on, the results are valuable for the period in which they were obtained, even if the explanation phenomenon heterosis is different.

So here are some elements that lead us to believe that Emil and Glicheria Tăpălaru can be considered forerunners chief of vegetable research in our country.

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